

## WHAT IS CLAIMED IS:

## 1. An apparatus for detecting molecular presence, comprising:

a substrate adapted to support an arrangement of sensor cells for detecting molecular presence;

5 a plurality of first sensor cells supported on said substrate;

each of said first sensor cells having an output adapted to output a recognition signal responsive to detection of molecular presence by the associated first sensor cell; and

a plurality of second sensor cells supported on said substrate, each said recognition signal including noise which can be approximated based on a position of one of said second sensor cells relative to the associated first sensor cell on said substrate, said first sensor cells and said second sensor cells arranged on said substrate such that at least one of said second sensor cells occupies said position relative to each of said first sensor cells.

## 2. The apparatus of Claim 1 further comprising a signal recovery unit having a first

15 input coupled to one of said first sensor cells for receiving the associated recognition signal and a second input for receiving an indication of the associated noise, said signal recovery unit responsive to said noise indication for filtering the associated noise from said recognition signal.

3. The apparatus of Claim 2, wherein said signal recovery unit is for subtracting said noise from said recognition signal.

4. The apparatus of Claim 1, wherein said position is defined by a first distance  
5 between the associated first and second sensor cells.

5. The apparatus of Claim 4, wherein said first sensor cells and said second sensor cells are arranged in an ordered fashion on said substrate such that adjacent sensor cells are separated by said first distance.

6. The apparatus of Claim 1, wherein said first sensor cells comprise a molecular recognition element and a transducing element coupled to said molecular recognition element for converting a molecular recognition event into said recognition signal.

7. The apparatus of Claim 1, wherein said second sensor cells adapted for detection  
15 of a further molecular presence.

8. The apparatus of Claim 1 further comprising a plurality of third sensor cells supported on said substrate, each said recognition signal including further noise which can be approximated based on a further position of one of said third sensor cells relative to the associated first sensor cell on said substrate, said third sensor cells arranged on said substrate such that at least one of said third sensor cells occupies said further position relative to each of said first sensor cells.

9. The apparatus of Claim 8 further comprising a signal recovery unit having a first input coupled to one of said first sensor cells for receiving the associated recognition signal and a second input for receiving an indication of the associated noise, said signal recovery unit responsive to said noise indication for filtering the associated noise from said recognition signal.

10. The apparatus of Claim 9, wherein said signal recovery unit is for subtracting said noise from said recognition signal.

11. The apparatus of Claim 8, wherein said position is defined by a first distance between the associated first and second sensor cells and said further position is defined by a second distance between the associated first and third sensor cells, said first sensor cells and said second sensor cells and said third sensor cells further arranged in an ordered fashion on said substrate such that adjacent sensor cells are separated by said first distance.

12. The apparatus of Claim 11, wherein said second distance is greater than said first distance.

5 13. The apparatus of Claim 8, wherein said second and third sensor cells are adapted for detection of further respective molecular presences.

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14. A method of arranging on a substrate a plurality of first sensor cells and a plurality of second sensor cells for detection of molecular presence, comprising:

determining that noise associated with an indication of molecular presence by any of said first sensor cells can be approximated based on a position of one of said second sensor cells relative to the first sensor cell on said substrate; and

arranging said first sensor cells and said second sensor cells on said substrate such that at least one of said second sensor cells occupies said position relative to each of said first sensor cells.

15. The method of Claim 14 further comprising filtering said noise from a molecular presence indication by one of the first sensor cells responsive to an associated noise indication.

16. The method of Claim 15, wherein said filtering step includes subtracting said noise from said molecular presence indication.

17. The method of Claim 14, wherein said position is defined by a first distance between the associated first and second sensor cells.

18. The method of Claim 17 further comprising arranging said first sensor cells and said second sensor cells in an ordered fashion on said substrate such that adjacent sensor cells are separated by said first distance.

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19. A method of arranging on a substrate a plurality of first sensor cells, a plurality of second sensor cells and a plurality of third sensor cells for detection of molecular presence, comprising:

determining that noise associated with an indication of molecular presence by any of said first sensor cells can be approximated based on a position of one of said second sensor cells relative to the first sensor cell on said substrate;

determining that further noise associated with an indication of molecular presence by any of said first sensor cells can be approximated based on a further position of one of said third sensor cells relative to the first sensor cell on said substrate; and

arranging said first sensor cells and said second sensor cells and said third sensor cells on said substrate such that at least one of said second sensor cells occupies said position relative to each of said first sensor cells and at least one of said third sensor cells occupies said further position relative to each of said first sensor cells.

21. The method of Claim 19 further comprising filtering said noise and said further noise from said molecular presence indication responsive to an associated noise indication.

22. The method of Claim 19, wherein said position is defined by a first distance between the associated first and second sensor cells and said further position is defined by a second distance between the associated first and third sensor cells.

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23. The method of Claim 22 further comprising arranging said first sensor cells and said second sensor cells and said third sensor cells in an ordered fashion on said substrate such that adjacent sensor cells are separated by said first distance.

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24. The method of Claim 23, wherein said second distance is greater than said first distance.

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